Hyperhomocysteinaemia attributes to ten percent of all cardiovascular disease in a 50-75 year old Caucasian population

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2.P.204 Homocysteine, recurrent cardiac events, and the methylenetetrahydrofolate thermolabile mutation in coronary artery disease patients

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Background: Numerous studies have in recent years implicated hyperhomocysteinemia as an independent risk factor for coronary artery disease (CAD). The primary genetic cause of hyperhomocysteinemia is a homozygous thermolabile mutation in the enzyme methylenetetrahydrofolate reductase (MTHFR). While an independent risk factor for heart disease, the association between homocysteine and the frequency of recurrent cardiovascular events is poorly understood. The purpose of this study was to examine the frequency of the MTHFR mutation, and plasma hyperhomocysteine and their association with recurrent cardiovascular events in the Calgary CARE (cholesterol and recurrent events) population.

Methods: We examined 120 patients who were previously enrolled in the CARE study and have had their cardiovascular events documented for a mean of 5 years. Both the fasting and methionine load plasma homocysteine concentrations in the Pravastatin, placebo, and methylenetetrahydrofolate reductase thermolability groups were related to the time and number of recurrent cardiovascular events. The homocysteine concentrations were also compared to a control population.

Results: The mean fasting homocysteine concentration for the controls was 10.5 μmol/L and the CAD population, 13.48 μmol/L and those in the CAD population with the MTHFR mutation, 21.19 μmol/L. The proportion of patients with an event after five years was 50% in the MTHFR thermolabile group and 37% in those who were not thermolabile for MTHFR ($p = 0.07$). The probability of recurrent events in the placebo and Pravastatin group at 5 μmol/L of plasma homocysteine was 51% and 38% and at 20 μmol/L 74% and 59% respectively ($p < 0.05$).

Conclusion: Plasma homocysteine concentrations are significantly elevated in the CAD population compared to the controls. There was a 26% increase in the probability of a recurrent events associated with the thermolabile MTHFR. A 10 μmol/L increase in fasting homocysteine corresponded to an increased risk for recurrent events of 32% in the placebo and 28% in the Pravastatin groups. There was no relationship between recurrent events and the methionine load response.

2.P.205 The assessment of determinants of cardiovascular risk factor clustering by multiple regression analysis

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Multiple risk factor clustering syndrome, which accelerate the formation of atherosclerosis strikingly, has become a topic of interest. Several confounding variables, such as insulin resistance, physical inactivity, or obese, may affect this syndrome. But in Japanese population the detail has not been discussed yet. The purpose of this study was to assess the relationship between this syndrome and the factors which might affect the risk factor clustering. Subjects were 141 so-called healthy males (52.5 ± 8.7 y.o.). Physical examination, lipid profile analysis and 75 g-OGTT were performed after an overnight fast. Insulin areas under the curve of OGTT were utilized as a parameter of insulin resistance. Physical fitness was measured by symptom limited treadmill exercise test and exercise time was utilized as a parameter of physical fitness. Risk factors were included hypertension (systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg), total cholesterol >220 mg/dl, triglycerides >150 mg/dl, HDL-C < 40 mg/dl, and abnormal pattern in OGTT. The number of risk factor was selected as a dependent variable and age, body mass index, and exercise time were selected as independent variables. Multiple regression analysis with stepwise forward selection method revealed that all the independent variables are significant ($R2 = 0.24$). But when insulin area added into the independent variables, insulin area was the only factor which was selected as significant and the others were neglected. These results suggested that obesity, aging, and physical fitness were actually important factors which affected the risk factors but the condition of insulin resistance was the most powerful determinant for the clustering of risk factors also in Japanese population.

2.P.206 Hyperhomocysteinaemia attributes to 10 percent of all cardiovascular disease in a 50–75 year-old Caucasian population

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An elevated serum total homocysteine (tHcy) level is an important risk factor for cardiovascular disease. Serum tHcy level can be lowered through an increased intake of folate. In order to estimate the proportion preventable cardiovascular disease, we investigated the relationship between serum tHcy level and cardiovascular disease in an age-, sex- and glucose-tolerance stratified random sample (n = 631) from a 50–75 year-old general population.

Cardiovascular history, ECGs, ankle brachial pressure indices and duplex scans of the carotid arteries were obtained from all subjects. Cardiovascular disease was defined as a history of TIA/stroke, carotid artery stenosis >80%, a history of myocardial infarction or coronary artery bypass grafting, Minnesota code 1-1 or 1-2, a history of lower limb amputation or peripheral arterial reconstruction and/or an ankle brachial pressure index <0.50.

The standardised prevalences of hyperhomocysteinaemia (>12 and >15 μmol/L) were 43.1% and 20.1%. After adjustment for age, sex, hypertension, hypercholesterolaemia, diabetes and smoking, the odds ratio (95% CI) for cardiovascular disease per 5 μmol/L (about 1 SD) tHcy increment was 1.39 (1.15 to 1.68). The proportion preventable cardiovascular disease due to a 5 μmol/L distribution shift of serum tHcy level was 10.6%.

We conclude that hyperhomocysteinaemia is an independent risk factor for cardiovascular disease in a 50 to 75 year-old general population. Approximately 10% of the population's cardiovascular disease appears attributable to hyperhomocysteinaemia.

2.P.207 Elevated levels of plasma homocysteine related to atherosclerotic lesions of vein grafts after coronary artery bypass grafts (CABG)

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Elevated levels of plasma homocysteine have been reported as an independent risk factor for coronary atherosclerosis. The aim of this study is to determine whether plasma homocysteine relates to atherosclerotic lesions of vein grafts of coronary artery bypass. We measured homocysteine in fasting plasma by high-performance liquid chromatography and evaluated other lipids and risk factors in 40 patients (mean aged 65 ± 8) from 1 to 13 years after CABG surgery. Vein graft disease (+) (n = 23) were defined as ≥50% angiographical stenosis in any vein graft and the rest patients were vein graft disease (−) (n = 17). Homocysteine levels in vein graft disease (+) were significantly higher than in vein graft disease (−) (median 15.1 vs 10.6 n mol/ml, $p = 0.01$). The levels of lipids and other risk factors were not different between two groups, except that HDL cholesterol was significantly lower in vein graft disease (+) than in vein graft disease (−) (mean 33.6 vs 46.5 mg/dl, $p = 0.01$). Homocysteine levels had no significant correlation to levels of any lipids. These findings indicate that elevated levels of plasma homocysteine relate to atherosclerotic lesions of vien grafts of coronary artery bypass as well as coronary atherosclerosis.

2.P.208 Associations between triglycerides and cholesterol levels and myocardial infarction: Results of the Tunisian study

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There now strong evidence from a number of epidemiological studies of an independent and positive association between the incidence of coronary heart disease (CHD) and raised serum cholesterol and triglycerides levels. The purpose of the present study was to assess the relationship between triglycerides and cholesterol levels and myocardial infarction (MI) in a Tunisian population.

3722 patients were recruited from the coronary care units at Rabta and Charles Nicolle Hospitals, Tunis. Patients were divided into 2 groups; group A (n = 1001, aged 22 to 94 years) with MI and group B (n = 2721, aged 20 to 92 years) without MI.

Patients with MI (group A) showed a significant increase in both triglycerides and plasma cholesterol (1.86 ± 1.19 g/l; 2.00 ± 0.49 g/l, $p < 0.001$) as

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